

Determine Erionite Occurrence in Southeastern Montana and Relationship to MDT Highway Construction, Past and Future

Scope-of-Work

Erionite is a naturally occurring zeolite mineral usually found in volcanic ash that has been altered by weathering and groundwater interaction. It is a microscopic, wooly fibrous mineral with properties very similar to asbestos. Potential serious health hazards, similar to those associated with asbestos have been identified with Erionite. The U.S. Environmental Protection Agency and the State of North Dakota have documented numerous occurrences of Erionite in southwest North Dakota in gravel deposits associated with the Arikaree, Brule, and Chadron Formations. The Arikaree Formation is mapped in several locations in southeast Montana in the vicinity of Ekalaka and north of Alzada.

This research effort has been envisioned as a two-phase process. This request covers Phase I. An assessment of current Erionite formation in the State and its potential impact in use on past construction projects and the risk to future activities, and if possible to isolate those past projects and recommend the processes required to insure the safety of the workers and travelling public in dealing with the potential presence of Erionite on future construction or maintenance projects. Phase II, if warranted, would be to conduct soil testing in qualified sites to ascertain the presence of Erionite within the highway corridors or aggregate sources. This project will include, but not be limited to:

Phase 1

1. Through a review current and applicable literature, report on studies or any published information that can assist in the formulation of recommendations with the following tasks.
2. Report on the known potential health risk of the mineral Erionite.
3. Through available information, demarcate the geological regions or known formations or source rock, which contains the mineral Erionite within the State of Montana and adjacent states.
4. Determine aggregate sources that may have been used as material supply for past highway construction projects involving the Montana State highway system designations in the known Erionite formations. In addition, ascertain which past State highway projects may have used those sources. Proposed approaches to gathering this information should be detailed in the proposal, data needs must be identified in the work plan and how the contractor intends to obtain that information.
5. Report on the level of processes required needed during a maintenance or construction project to minimize the potential detrimental effects of Erionite

contaminated soils directly related to that activity. The contractor may also relate this task to other similar activities relating to farming, firefighting, etc.

6. Develop procedures and special provisions to identify and deal with the mineral Erionite that may have been used on past highway and other public works projects for use in future construction or maintenance projects that will insure the safety of the workers and travelling public.

Based on the outcome of the above tasks and recommendations, there may be an impetus to conduct soils testing for Erionite within the right-of-way at those highway corridors or aggregate sources and/or adjacent areas if determined that through natural occurrences (erosion, soil creep, rockfall, flood, etc.) may have aided the transfer of Erionite to those sites. The contractor is asked to justify the testing regime, and determine location and frequency of soil testing for potential Erionite contamination.

Based on the results of Phase I, The Montana Department of Transportation (MDT) will determine, if any or at what level, additional testing is needed or cancels the project at that time. If additional testing or research is approved, MDT will ask the contractor to submit a revised work plan to accomplish these additional tasks.

Due to the complexity of this effort, the selected contractor must attend a formal kick-off meeting with the Technical Panel and MDT staff in MDT's office in Helena. The contractor must also make a formal presentation to MDT's Administrative staff and other interested parties following completion of the project.